RE: Harbor Pathogen TMDL

Miller, Robin to: Barbara Hirst, Rosella OConnor 01/30/2012 03:44 PM
Cc: Felix Locicero

Barbara:

Does this explanation help:

Calculation of Return Intervals for Enterococci
Bathing Season Geometric Means

PATH model simulations were carried out for thirteen years. For each year, the bathing season geometric mean Enterococci concentration was calculated for a selected grid cell in each waterway. For each grid cell/waterway, a probability diagram was constructed with the bathing season geometric mean concentrations.

In the case of the Passaic River and Hackensack River, the probability corresponding to a 3-year return interval falls between the bathing season geometric mean Enterococci concentrations for 2000 and 2003 (closer to 2000 than 2003). Based on this result, 2000 and 2003 can be used for testing/screening purposes when loadings are changed; however, it is still necessary to run all thirteen years with the final loadings to verify that the loadings changes did not change the relative probability rankings of the results for various years.

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-----Original Message-----
From: Barbara Hirst [
mailto:Barbara.Hirst@dep.state.nj.us]
Sent: Monday, January 30, 2012 11:40 AM
To: OConnor.Rosella@epamail.epa.gov
Cc: Locicero.Felix@epamail.epa.gov; Miller, Robin
Subject: Re: Harbor Pathogen TMDL

Thanks for this info but I still don't understand why we need to run the full 13 year simulation when

we decided to go with hydrology that equals the 3 year recurrence interval. What is the relationship between the two? Also, as I mentioned, folks here are not ready to call Oradell input de minimus, so we need to keep that in the discussion.

>>> <OConnor.Rosella@epamail.epa.gov> 1/30/2012 11:21 AM >>>
Hi Barbara,
In response to our discussion on Friday, I followed up with Robin on two technical questions (see below). I believe these responses address your concerns and the only remaining issue for our Wednesday call is the boundary conditions the Dundee Dam and Saddle River

1. You raised a concern about the following task that was identified in a previous e-mail:

Report Hackensack and Passaic seasonal geo mean Enterococci outputs in every grid cell for 1 in 3 year return frequency. If EPA/State likes compliance results, run for the additional 11 years.If non-compliance of if EPA/State doesn't like compliance results, re-run 2000 and 2003 with a different Passaic CSO reduction, check output, and then run for the additional 11 years.

Below is Robin's explanation of the suggested approach.

When we get to the point of running the model with a modified head-of-tide load for the Passaic and Saddle Rivers, it would be foolish to run for all thirteen simulation years for testing. Since we know that the 2000 and
2003 years bracket the 1 in 3 year return frequency, we should run those two years first and examine the outputs. If it looks like these are the final results that we will use in terms of the loading reductions (10% SW, 87% Passaic CSO, and 70% Hackensack CSO, with modified head-of-tide), we can go ahead and run the remaining 11 years needed for a full thirteen year simulation. The thirteen year results would then be verified for
compliance and we are done. If it doesn?t look like the loading
reductions are the final ones based on 2000 and 2003, say maybe we want to try and backdown the 87% Passaic CSO reduction, for example, then we would re-run the 2000 and 2003 years again to test new reductions. The full thirteen years would be run using the final inputs selected.

Stated another way, it isn?t a good use of schedule or budget to keep running all 13 years for each test of input changes. For input change testing purposes, we can run with the two years we believe govern the 1 in
3 year exceedance (2000 and 2003). When we get to the final run , we run for all 13 years so we have

the proof/verification of meeting the standa rd.

2. Another concern was that all boundary conditions should be treated in a consistent manner. As I mentioned on the phone, only the Hackensack and Passaic Rivers exceed the standard, therefore, this is not an issue in the rest of the Harbor. Robin provided the basis for that conclusion below:

This is the data (not model results) that was the basis for determining
TMDLs are needed in Hackensack and Passaic not other Harbor areas . As I
mentioned, on the call the modeling was not the basis of selecting the waters so we do not need to revisit specification of head-of-tide modeling in other areas.

This section addresses the attainment of primary contact recreation criteria based on the States Interpretation of the Beach Act. In this case, the criteria are based on a seasonal enterococci geometric mean concentration of 35 No./100mL. The assessment is based on recent water quality data (2008 ? 2009) and model results that represent a three year return period.

Data Analysis
Data collected in 2008 and 2009 were evaluated for compliance of primary contact recreation. The basis for this analysis is the New York City Harbor Survey (NYHS) data and the New Jersey Harbor Discharge Group (NJHDG) Survey data. Both these groups survey their respective stations approximately once per week during the summer period. The station locations for these surveys are shown on Figures 3 and 4.
The geometric mean concentrations for enterococci were calculated for both the NYHS data and the NJHDG data. These results are shown on Tables 7 and 8.
This analysis focuses on the open waters of the harbor. The tributaries in New York (i.e. Gowanus Canal, Bronx River, etc) are not considered art of the study. Likewise, the Saddle River, Second River, tributaries to the Passaic River, Berrys Creek tributary to the Hackensack River, and the Rahway River are not considered part of this analysis.
The results indicate that for the open waters that there is a slight non-attainment in the Harlem River using the NYHS data and there is observed non-attainment in the Passaic River and Hackensack River using the NJHDG data

Table 8. Statistical Characteristics of NJHDG 2008 ? 2009 Enterococcus Data

Seasonal Geometric Mean Station ID
Station Location

Standard
Seasonal
Compliance with Recreational
Geo Mean
Standards
1
Passaic/Totowa Ave.
FW2(1)
39
NA(3)
2
Passaic/Northwest St
FW2
104
NA
3
Passaic/Lincoln Ave.
FW2
79
NA
4
Passaic/Market St.
FW2
33
NA
5
Passaic/Dundee Dam
FW2
56
NA
6
Saddle River
35
375
N
7
Passaic/Union Ave.
35
83
N
8
Passaic/Rutgers St.
35
111
N
9
Second River
35
821
N
10
Passaic/Clay St.
35
94
N
11
Passaic/Jackson St.
35
76
N
12

Passaic/Kearney Pt.
35
13
Y
13
Hackensack/Oradell D
35
15
Y
14
Hackensack/Berrys C
35
140
N
15
Hackensack/Marion
35
40
N
16
Hackensack/Mouth
35
16
Y
17
Newark/Upper
35
7
Y
18
Newark/Lower
35
4
Y
19
Newark/Shooters Is.
35
4
Y
20
Elizabeth
FW2
480
NA
21
Arthur Kill/Elizabeth
35
12
Y
22
Rahway
35
244
N
23
Arthur Kill/Rahway
35
7
Y
24
Arthur Kill/Reading

35
5
Y
25
Raritan/Upstream
FW2
245
NA
26
Raritan/Basilone Br.
FW2
48
NA
27
Raritan/Wash. Canal
FW2
34
NA
28
Raritan Bay/West
35
6
Y
29
Raritan Bay/Central
35
2
Y
30
Raritan Bay/Crookes P
35
2
Y
31
Hudson/GW Bridge
35
3
Y
32
Hudson/Lincoln T
35
3
Y
33
Hudson/Holland T
35
4
Y